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| 10/682,057 | 10/09/2003 | Manfred Reinold | 10191/3400 | 8171 |

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| EXAMINER | |
|---|---|
| ABOAGYE, MICHAEL | |

| ART UNIT | PAPER NUMBER |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) |
|---|---|---|
| | 10/682,057 | REINOLD ET AL. |
| | **Examiner** | **Art Unit** |
| | Michael Aboagye | 1793 |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)☒ Responsive to communication(s) filed on *02 August 2007*.
2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)☒ Claim(s) *1-8,10 and 11* is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-8, 10 and 11* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

## Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a)☐ All b)☐ Some * c)☐ None of:
1.☐ Certified copies of the priority documents have been received.
2.☐ Certified copies of the priority documents have been received in Application No. _____.
3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 5-8, 10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang (US Patent No. 5,782,403).

Wang teaches a tool head capable for attaching or removing an electrical conductor on a contact surface of a substrate, comprising: a vibration exciter for generating linear ultrasonic vibrations ("30", figure 1); a bonding tool ("38", figure 1); a vibration conductor ("33", figure 1) for absorbing the linear ultrasonic vibrations of the vibration exciter; and a converter ("34" figure 1) situated between the vibration conductor and the bonding tool to convert the linear vibrations into radial vibrations such that the bonding tool is able to be incited to one of radial vibrations and rotary vibrations about a tool axis of rotation; wherein the radial vibrations are torsional vibrations (abstract, column 2, lines 39-64 and column 6, lines 25-34); wherein the vibration conductor being laterally secured on the converter perpendicularly to the center axis, wherein the bonding tool is secured at one end in the center axis of the converter (Figure 1 and column 3, lines 35-67, and column 6, lines 25-34).

Regarding claim 5, it is noted that the vibration conductor, the vibration exciter and the converter form distinct pieces assembled together, hence the limitation of being free from each other as recited in claim 5 is met. Regarding claim 10, the method of Wang involves generating a linear vibrations parallel to the substrate plane (this examiner's assertion is supported by the applicant's own admission (see, applicant's specification, background on invention, page 1, line 28-page 2, line 1). With respect to claims1-3 and 5-8 the intended use of the instant claimed apparatus is noted, however, the intended use does not patentably distinguish said claimed apparatus over the prior art. The intended use of the claims does not structurally limit the apparatus. In addition, the prior art apparatus is capable of performing the desired functions.

3. Claims 1-3, 5-8, 10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishikawa et al. (US Patent No. 5,662,766).

Ishikawa et al. teaches a tool head capable for attaching or removing an electrical conductor on a contact surface of a substrate, comprising: a vibration exciter for generating linear ultrasonic vibrations ("VH", figure 1); a bonding tool (2, figure 3); a vibration connecting member ("15", figure 1) for connecting the vibration exciter to a converter portion ("1" figure 3) situated between the vibration conductor and the bonding tool to convert the linear vibrations into radial vibrations such that the bonding tool is able to be incited to one of radial vibrations and rotary vibrations about a tool axis of rotation; wherein the radial vibrations are torsional vibrations (abstract, column 3, lines 5-35 and figure 1-3); wherein the vibration conductor being laterally secured on the converter perpendicularly to the center axis, wherein the bonding tool is secured at one end in the center axis of the converter ( figure 1), wherein the vibration conductor and the vibration exciter connected freely from the converter (see, configuration of figure l). Regarding claim 10, the method of Wang involves generating a linear vibrations parallel to the substrate plane (this examiner's assertion is supported by the applicant's own admission (see, applicant's specification, background on invention, page 1, line 28-page 2, line 1). With respect to claims 1-3 and 5-8 the intended use of the instant claimed apparatus is noted, however, the intended use does not patentably distinguish said claimed apparatus over the prior art. The intended use of the claims does not structurally limit the apparatus. In addition, the prior art apparatus is capable of performing the desired functions.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (US Patent No. 5,782,403) as applied to claim 1 above in view of Stock et al. (US Patent No. 5,733,074).

Wang does not expressly teach holding or attaching the converter at the nodal point or vibration.

However Stock et al. teaches the nodal point as a preferred position for coupling individual components such as electro-acoustic converter or a vibration amplifier of an ultrasonic device mainly due to the fact that the energy of the ultrasonic vibration at said nodal points are largely available as potential energy, and that the joint portion may not be exposed to any axial or lateral load which will result into undesirable relative movement of components part about the joint (Stock et al., abstract, column 2, line 58-column 4, lines 6 and figure 1).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to hold or support the converted in the device of Wang at a nodal point as taught by Stock et al. to avoid any axial or lateral load which may cause movements about the joint (Stock et al., column 2, line 58-column 4, lines 6).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. (US Patent No. 5,662,766) as applied to claim 1 above and in view of Stock et al. (US Patent No. 5,733,074).

Ishikawa et al. does not expressly teach holding or attaching the converter at the nodal point or vibration.

However Stock et al. teaches the nodal point as a preferred position for coupling individual components such as electro-acoustic converter or a vibration amplifier of an ultrasonic device mainly due to the fact that the energy of the ultrasonic vibration at said nodal points are largely available as potential energy, and that the joint portion may not be exposed to any axial or lateral load which will result into undesirable relative movement of components part about the joint (Stock et al., abstract, column 2, line 58-column 4, lines 6 and figure 1).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to hold or support the converted in the device of Ishikawa et al. at a nodal point as taught by Stock et al. to avoid any axial or lateral load which may cause movements about the joint (Stock et al., column 2, line 58-column 4, lines 6).

## ***Response to Arguments***

7. The examiner acknowledges the applicants' amendment received by USPTO on August 02, 2007. Claim 9 has been cancelled; new claims 10 and 11 have been added, therefore claims 1-8, 10 and 11 are currently under consideration in the application.

8. Applicant's arguments filed August 02, 2007have been fully considered but they are not persuasive. Applicant argues that neither Wang nor Ishikawa et al. recite, that the vibration exciter generates linear ultrasonic vibrations in a direction approximately parallel to the contact surface of the substrate. The examiner believes that, in general ultrasonic bonding devices are operable in generating linear ultrasonic vibrations in a direction approximately parallel to the contact surface of the substrate, this assertion is supported by the applicant's own admission (see, applicant's specification, background of invention, page 1, line 28-page 2, line 1, which recites: ***"In particular in ball-wedge***

***bonding, the ultrasonic energy is introduced via linear vibrations, parallel to the substrate plane").***

Applicant also argues that neither Wang nor Ishikawa et al. teach a vibration conductor being laterally secured on the converter perpendicularly to the center axis. Wang teaches ultrasonic transducer (30), that is possible disposed on a converter (34) via a laterally slidable member (40), (see, column 4, lines 35-41). Furthermore, It is the examiners position that the orientation of the vibration conductor with respect to the converter does not influence the functions of the devices and that said components can be aligned vertically or laterally and similar operational results can be achieved. That the orientation of the vibration conductor with respect to the converter on its merit does not patentable distinguishes the claimed invention from the prior art of record. Furthermore support for the examiner's assertion can also be derived from the applicant own admission (summary, page 3, lines 13-15, recites; "***An alignment of the bonding tool with respect to the line extension of the electrical conductor is also not required according to the present invention***".

## *Conclusion*

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Aboagye whose telephone number is 571-272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jonathan Johnson can be reached on 571-272-1177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JONATHAN JOHNSON
PRIMARY EXAMINER

Michael Aboagye
Assistant Examiner
Art Unit 1793
10/12/2007

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